

Journal of Catalysis

EDITORS:

W. Keith Hall

Frank S. Stone

EDITORIAL BOARD:

R. B. Anderson

M. Boudart

J. B. Butt

A. Cimino

R. P. Eischens

P. C. Gravelle

J. Haber

C. Kemball

G. W. Keulks

J. H. Lunsford

A. Nielsen

J. F. Roth

W. M. H. Sachtler

G. C. A. Schuit

P. W. Selwood

G. V. Smith

Z. G. Szabó

K. Tamaru

S. J. Thompson

P. B. Weisz

Volume 54 • 1978



ACADEMIC PRESS

New York and London

A Subsidiary of Harcourt Brace Jovanovich, Publishers

Copyright © 1978 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated, per copy fee through the Copyright Clearance Center, Inc. (Operations Staff, P.O. Box 765, Schenectady, New York 12301), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1978 articles are the same as those shown for current articles.

Contents of Volume 54

NUMBER 1, AUGUST 1978

A. J. A. KONINGS, A. M. VAN DOOREN, D. C. KONINGSBERGER, V. H. J. DE BEER, A. L. FARRAGHER, AND G. C. A. SCHUIT. ESR Studies of Hydrodesulfurization Catalysts: Supported and Unsupported Sulfided Molybdenum and Tungsten Catalysts.	1
M. ITO AND W. SUËTAKA. Formic Acid Decomposition on Evaporated Nickel and Copper Surfaces by Infrared Reflectance Spectroscopy.	13
J. P. GUILLORY AND C. M. SHIBLOM. The Generation of Singlet Oxygen by a Lithium-Tin-Phosphorus Catalyst.	24
A. UENO AND C. O. BENNETT. Infrared Study of CO ₂ Adsorption on SiO ₂	31
F. SOLYMOSI AND J. KISS. Adsorption and Reduction of NO on Tin(IV) Oxide Doped with Chromium(III) Oxide.	42
KAZUO URABE, TAKASHI YOSHIOKA, AND ATSUMU OZAKI. Ammonia Synthesis Activity of a Raney Ruthenium Catalyst.	52
J. S. BRINEN AND W. D. ARMSTRONG. Surface Chemistry of Activated Hydrodesulfurization Catalysts by X-Ray Photoelectron Spectroscopy.	57
G. CARNISIO, F. GARBASSI, G. PETRINI, AND G. PARRAVANO. Isotopic Mixing in Carbon Monoxide Catalyzed by Zinc Oxide.	66
M. S. JARRELL AND B. C. GATES. Infrared and Kinetics Study of Polymer-Bound Rhodium Cluster Catalysts for Olefin Hydrogenation.	81

NOTES

D. H. BRODERICK, G. C. A. SCHUIT, AND B. C. GATES. The Sulfided Co-Mo/ γ -Al ₂ O ₃ Catalyst: Evidence of Structural Changes during Hydrodesulfurization of Dibenzothiophene.	94
A. W. ALDAG AND A. CLARK. On the Interpretation of Apparent Heats of Adsorption from Kinetics for a Nonuniform Surface.	98
R. J. H. VOORHOEVE, C. K. N. PATEL, L. E. TRIMBLE, AND R. J. KERL. The Formation of Compounds with the C≡N Bond during Reduction of NO over Rhodium and Platinum Catalysts.	102

NUMBER 2, SEPTEMBER 1978

A. J. MOFFAT. A Dynamic Method for Measuring Tortuosity and Knudsen Diffusion Contributions to Catalyst Diffusivities.	107
L. LOUIS HEGEDUS AND KENNETH BARON. Phosphorus Accumulation in Automotive Catalysts.	115
M. M. BHASIN, W. J. BARTLEY, P. C. ELLGEN, AND T. P. WILSON. Synthesis Gas Conversion over Supported Rhodium and Rhodium-Iron Catalysts.	120
G. B. MCVICKER, R. L. GARTEN, AND R. T. K. BAKER. Surface Area Stabilization of Ir/Al ₂ O ₃ Catalysts by CaO, SrO, and BaO under Oxygen Atmospheres: Implications on the Mechanism of Catalyst Sintering and Redispersion.	129
J. ERKELENS AND W. J. WÖSTEN. Infrared Spectra of Chemisorbed Molecules. V. Magnetic and Infrared Measurements on Methane, Ethane, Ethylene, and Acetylene Adsorbed on Silica-Supported Nickel.	143

P. RATNASAMY AND H. KNÖZINGER. Infrared and Optical Spectroscopic Study of Co-Mo-Al ₂ O ₃ Catalysts.....	155
KATSUTOSHI OHKUBO, TAKAYUKI SHOJI, AND KOHJI YOSHINAGA. Asymmetric Dehydrogenation of Secondary Carbinols by Ruthenium (II) Chiral Phosphine Complexes.....	166
ISAO MOCHIDA, KAZUNORI KITAGAWA, HIROSHI FUJITSU, AND KENJIRO TAKESHITA. Enhanced Catalytic Activity of a Nickel Complex for the Dimerization of Isoprene by the Addition of Cyclic Amines.....	175
J. J. FREEMAN AND M. L. UNLAND. Laser Raman Study of Benzene Adsorption on Alkali Metal X and Y Zeolites.....	183
TOYOSABURO TAKEUCHI, OSAMU TAKAYASU, AND SEIKI TANADA. The Reduction Mechanism of Powdered Copper-Nickel Oxides.....	197
JAMES T. RICHARDSON AND REGIS J. DUBUS. Preparation Variables in Nickel Catalysts.....	207
M. J. D. LOW AND A. G. SEVERDIA. Reactive Silica. XIII. Activation of Silica by Pyrolyzing Chemisorbed HSiCl ₃	219
MAMORU AI. The Relationship between the Oxidation Activity and the Basicity of Modified Co ₃ O ₄ Catalysts.....	223
J. K. A. CLARKE, I. MANNINGER, AND T. BAIRD. Preparation of Supported Platinum-Gold, Platinum-Tin, and Rhodium-Copper Catalysts and Some Tests with <i>n</i> -Hexane/Hydrogen Reactant.....	230
A. VAN DER BURG, J. DOORNBOS, N. J. KOS, W. J. ULTEE, AND V. PONEC. Selectivity of Ni-Cu and Pt-Au Alloys in Reactions of Butanol and Related Compounds.....	243
KENNETH J. KLABUNDE, STEPHEN C. DAVIS, HIDESHI HATTORI, AND YASUTAKA TANAKA. Clustering of Metal Atoms in Organic Media. V. Production of Tailored Selectivity in Nickel Catalysts: Comparisons with Raney Nickel....	254
R. J. H. VOORHOEVE AND L. E. TRIMBLE. Conversion of NO to Isocyanic Acid and Ammonium Cyanate over Pd, Ir, and Pt-10% Rh Catalysts.....	269

NOTES

Y. MORIKAWA AND Y. AMENOMIYA. Exchangeable Oxygen on Alumina.....	281
JULIUS SCHERZER. Dealuminated Faujasite-Type Structures with SiO ₂ /Al ₂ O ₃ Ratios over 100.....	285

NUMBER 3, OCTOBER 13, 1978

CHARLES T. CAMPBELL AND J. M. WHITE. The Adsorption, Desorption, and Reactions of CO and O ₂ on Rh.....	289
J. A. SCHWARZ, B. G. RUSSELL, AND H. F. HARNSBERGER. A Study of Pyridine Adsorbed on Silica-Alumina Catalysts by Combined Infrared Spectroscopy and Temperature-Programmed Desorption.....	303
K. FOGER AND J. R. ANDERSON. Reactions of Neopentane and Neohexane on Platinum/Y-Zeolite and Platinum/Silica Catalysts.....	318
F. SOLYMOSI, L. VÖLGYESI, AND J. SÁRKÁNY. The Effect of the Support on the Formation and Stability of Surface Isocyanate on Platinum.....	336
M. DEFLIN, I. M. ELTANTAWY, AND M. BAVEREZ. Alumina-Organic Interaction: Oxidation of Aromatic Compounds on Alumina Surface.....	345

CLAUDIO MORTERRA, SALVATORE COLUCCIA, ANNA CHIORINO, AND FLORA BOC- CUZZI. Infrared Study of the Adsorption of Pyridine on α - Al_2O_3	348
J. BLANCO, A. RAMOS, AND J. SORIA. Decomposition of <i>n</i> -Butane on Alkaline-Earth Mordenites.....	365
NOEL W. CANT, P. C. HICKS, AND B. S. LENNON. Steady-State Oxidation of Carbon Monoxide over Supported Noble Metals with Particular Reference to Platinum.....	372
C. F. NG AND G. A. MARTIN. Poisoning of Ni/SiO ₂ Catalysts with H ₂ S: Chemi- sorption of H ₂ , CO, C ₆ H ₆ , and C ₂ H ₂ Studies by Magnetic Methods.....	384
S. FUENTES AND F. FIGUERAS. Kinetics of Self-Poisoning of Pd/Al ₂ O ₃ Catalysts in the Hydrogenolysis of Cyclopentane: Influence of the Dispersion of Palladium and Sulfate Poisoning.....	397
J. SCHERZER AND J. L. BASS. Ion-Exchanged Ultrastable Y Zeolites. II. Alkaline Earth-Exchanged Zeolites.....	405
J. B. BENZIGER, E. I. KO, AND ROBERT J. MADIX. The Characterization of Surface Carbides of Tungsten.....	414
MAMORU AI. Catalytic Activity for the Oxidation of Methanol and the Acid-Base Properties of Metal Oxides.....	426

NOTES

KAZUO URABE, ASAO OH-YA, AND ATSUMU OZAKI. Isotopic Equilibration of Nitrogen on Potassium-Promoted Transition Metal Catalysts.....	436
TADASHI OKAWA, MITSUYUKI SOMA, HIROSHI BANDOW, AND KIYOSHI UCHIDA. Importance of Vibrational Coupling in the Vibrational Frequency Shifts of Diatomic Molecules Caused by Adsorption.....	439
C. IDIOTIU, E. SEGAL, AND B. C. GATES. Decomposition of Cumene Hydro- peroxide Catalyzed by Soluble and Polymer-Bound Sulfonic Acid Groups.....	442
KIYOTAKA MATSUO, MASAHIRO NITTA, AND KAZUO AOMURA. The Activities of Manganese Nodules and Manganese-Iron Mixed Oxide for Decomposi- tion of Isopropyl Alcohol.....	446

LETTERS TO THE EDITORS

F. E. MASSOTH. Comments on "Stabilization Effect of Co for Mo Phase in Co-Mo/Al ₂ O ₃ Hydrodesulfurization Catalysts Studies with X-Ray Photoelectron Spectroscopy".....	450
YASUAKI OKAMOTO, TOSHINOBU IMANAKA, AND SHIICHIRO TERANISHI. Reply to the Comments by F. E. Massoth.....	452

BOOK REVIEWS.....	454
-------------------	-----

AUTHOR INDEX FOR VOLUME 54.....	457
---------------------------------	-----

Subject Index for Volume 54 will appear in the December 1978 issue as part of a cumulative index for the year 1978.

